REMARKS

Claims 1- 10 are now in the application. No claim has yet been allowed.

Claims 1-4 were previously rejected under 35 U.S.C. 103(a) as being unpatentable over Wilkins (U.S. Patent 5,446,919) and Schulman (U.S. Patent 5,600,366) as well as Tsuria (U.S. Patent 5,786,845). With entry of the foregoing amendment and following remarks, Applicant respectfully traverses these rejections.

The Applicants' invention is directed to an efficient scheme for routing targeted promotional content to specific set-top boxes. A solution to this problem is not as straightforward as it might appear at first glance, as promotions must be routed to thousands of selected possible destinations, and played back with minimal work at the set top boxes. The present invention seeks to overcome these limitations by making use of idle video-on-demand channel capacity to deliver promotional content to selected set-top boxes in the network, and by a specific sequence of messages and triggers..

Briefly, a network configured in accordance with the invention includes a promotion server, a scheduler process, and a message router located and/or controlled at a central location. It also uses head end locations that include message servers, Video on Demand (VOD) servers, and trigger insertion equipment. Set-top boxes (STBs) located at subscriber premises include at least a message client process and a promotion agent process.

The promotion server determines an asset to be distributed such as a targeted promotion item (e.g., a commercial), and a list of STBs that are to receive it. The promotion server causes the video promotion to be sent to a VOD service so that it is available at the VOD servers at the head ends.

The scheduler process then delivers schedule messages to the head end message servers which identify the promotion and an STB which is to receive it. Receipt of a schedule message by the head end message server causes its associated VOD server to cue the asset by loading the asset, and starting the asset, but pausing it so that the asset does not yet play.

Prior to the occurrence of a commercial slot in a broadcast program, an asset trigger is inserted into the broadcast stream at the head end before the broadcast stream is forwarded to the STBs. This asset trigger contains only general information concerning the asset to be sent, and a

VOD channel number. The STB receives the asset trigger and readies itself to tune to the VOD channel, but does not yet tune to it.

Upon detection of a commercial begin cue tone in the broadcast channel, the head end message server sends a tune away trigger to the STB, and also instructs the VOD server to start playing the cued promotion. Only when the STB receives the tune away trigger does it switch from the broadcast channel being played to the selected VOD channel, which it knows from asset trigger that it received prior to the tune away trigger. The promotion is viewed.

When a commercial end cue is detected in the broadcast channel, the head end message server instructs the STB to send a tune back trigger. The tune back trigger causes the STB to return to the broadcast channel that was being watched prior to delivery of the promotion.

Fig. 2 describes a preferred embodiment of the invention in more detail.

In step 510, the promotion server assigns promotion assets to specific STBs 410, and also stores this information in the data base server 210.

In step 520, the scheduler 240 determines that promotions are in need of distribution, and reads the information in the database 210 to create individual transmission schedules. From the schedules, the selection builds a list of promotion schedule messages (PSMs). A promotion schedule message (PSM) is created for each instantiation of an expected playback of a promotion at a particular STB 410. The schedule message contains payload fields identifying a promotion, the network address or other identifier of the individual STB which is to receive the promotion, and an expected time by which the promotion is to be delivered.

In step 530 the routing server 230 routes the schedule messages out over the data network 275 to the intended head end 300 via the routers 250 and 310.

Following that, in step 540 a particular schedule message arrives at the message server 320. The message server in turn sends a message to its associated local VOD/media server 340 that a promotion is to be sent to a specific STB.

In step 545, this causes the VOD/media server 340 to load the identified asset, and cue the asset for playback, but without actually starting the playback at this time. The VOD takes other steps at this time, such as to identify a VOD channel number on which the asset will be played, back to the message server 320.

At this point, in step 548, the message server 320 also communicates with the specific STB 410 indicated in the schedule message. This message may include information about the asset, such as an identifier which the promotion agent 430 in the STB may use to record the fact that it was actually played. This message is sent over the OOB/IB data path to the STB 410.

After some period of time, a state 550 is entered which occurs a short time before a commercial break. In this state the message server (320) causes an asset trigger to be inserted in the broadcast stream. This asset trigger may typically be sent in the Vertical Blanking Interval (VBI), or in other ways. The asset trigger contains text characters, or other data indicating general information identifying the upcoming promotion, and a VOD channel number on which it will be played. It does not cause playback of the VOD content.

Next, a commercial cue is detected in the broadcast signal at the head end 300 as output by a digital ad insertion system typically located at the insertion location in the broadcast network. Since only a few VOD channels will be used for the purpose of distributing promotions, the handful of such channels used for this purpose can be monitored at the head end for such tones. Detection of commercial cue causes a tune away trigger to be sent, in step 560, from the head end 300 to the STB 410.

In turn, receipt of the tune away trigger causes the promotion agent 430 in the STB 410 to immediately switch to the indicated VOD channel. At the same time, the message server 320 at the head end signals the VOD/media server 340 to begin playback of the promotion.

The STB may also include circuits that blank an undesirable "pixelation" effect that may occur during channel switchover to the VOD channel. Alternatively, other information such as channel information is displayed during switchover to the VOD channel.

The promotion is then viewed at the STB 410 in state 565, until a commercial end tone is detected.

At this point, in state 570, the message server 320 instructs the promotion agent 430 in the STB 410 to return to the original broadcast channel, such as by sending another tune back trigger.

The primary reference used by the Patent Office in rejecting Applicants' claims was Wilkins (U.S. Patent 5,466,919). That patent does describe a communication system capable of delivering a demographically determined promotion, such as a commercial. The channel viewed

in that system is determined by one of two sources; either the viewer's channel selection or "selection profile commands".

Selection profile commands are carried out in a specific way by Wilkins which is different from Applicants' claimed invention, however. More specifically, a digitally controlled demodulator (111) tunes in to the demographic and psychographic information channel, which is a video channel specially reserved for providing such information. This information channel is a broadcast channel, such as may be a spare one of the available video channels. A vertical interval detector (121) strips digitally encoded information from the baseband video signal in the demographic and psychographic a channel (See Wilkins at column 10, lines 47-58.) For example, the transmission can include data associating a particular household ID number with a specific income. The demographic decoder (131) analyzes the output of the vertical interval detector (121) and write demographic/psychographic data corresponding to the household's identification number to a non-volatile storage area (132) in the viewer's set top box.

Delivery of a targeted televison advertisement then precedes in a manner described that is also quite different from Applicants' claimed invention. Immediately prior to a broadcast commercial time, a selection profile command is read by the selection profile decoder, again detecting data received from a vertical interval detector (122). This selection profile command is set immediately prior to commercial time. In the illustrated example, it offers three commercial alternatives, depending on household income. It is understood therefore that the microprocessor (150) in the set top box then immediately determines which channel to switch to, and then switches to it after a logical comparison operation on like information it receives from the vertical interval detector.

At the end of each of the advertisements, a selection profile command is then issued to return the original channel to view the program originally selected by the viewer. (See column 11, lines 10-13 and lines 27-37.)

It is also understood that in Wilkins, demographic information can be transmitted as program tags downloaded to set top boxes. An example described in column 12, lines 45-59 uses cascaded Barker channels. The set top box must then compare the transmitted event number to those it has stored. If the set top box finds a match that it has been authorized for, it then will tune to the indicated pay per view channel. (See column 12, lines 9-16.) However, as with the

previous example in Wilkins, immediately prior to broadcast the targeted advertisement, the head end transmits a selection profile command (310) that program event 28 on channel 2, for example, is starting and has Barker channel 4. Then playback immediately occurs, with no further "triggers". (See column 13, lines 9-11.)

Thus in the system described in Wilkins, if the tag messages are considered to be the same as Applicants' "trigger messages", uses only single trigger messages that cause the set top box to immediately switch to the indicated Barker channel. This is unlike Applicants' claimed invention, where commercial cue tone signals embedded in broadcast channels must first occur to detect a VOD channel number, and a second trigger is then sent to cause the set top box to actually switch to the indicated VOD channel.

Applicants' invention thus has the advantage that the set top boxes are alleviated from participating in logical decisions immediately prior to a commercial broadcast. The set top boxes merely continue to listen to commercial cue tone signals in broadcast channels indicating an upcoming start of a commercial segment, and then watch for a second trigger.

No such notion of the sequence of events set forth in Applicants' claim 1 is found or suggested in Wilkins. Neither do Schulman nor Tsuira provide these missing elements of Applicants' claims. Therefore, it is believed that the Patent Office has failed to make out a prima facie case of obviousness of Applicants' invention, given that several claim elements are missing entirely.

Other aspects of the dependent claims, especially new claim 5 for example, are not found in the prior art. For example, claim 5 further requires that the scheduler build a list of promotions schedule messages, with a message created for each instantiation of an expected playback of a promotion as specified set top box.

Claim 6 also further requires the VOD server to return a VOD channel number to the head end.

New claim 8 is an independent claim that specifically recites the sequence of messages exchanged between the promotion server and head end (promotion schedule messages (PSM) are sent for each instantiation of promotion at a specific STB); at the head end server, sending messages that identify a promotion, but not a VOD channel; and sending the VOD channel

information over a first broadcast trigger that does not initiate playback; and finally sending a second trigger (the tune away trigger) to the STB.

Further aspects of new claim 10 require the message server to communicate with specific top box indicated in a schedule message, such as to provide an identifier which the promotion agent in the set top box may use to record the fact that the message was played. This message is sent over the data path to the STB. In the cited prior art reference there is no such notion of a message, nor is there either a separate data path.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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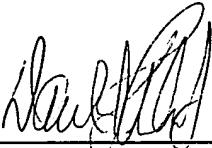
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